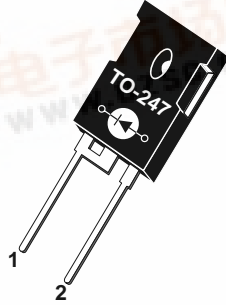




1 - Cathode
2 - Anode
Back of Case - Cathode



ULTRAFAST SOFT RECOVERY RECTIFIER DIODE

PRODUCT APPLICATIONS	PRODUCT FEATURES	PRODUCT BENEFITS
<ul style="list-style-type: none"> • Anti-Parallel Diode <ul style="list-style-type: none"> -Switchmode Power Supply -Inverters • Free Wheeling Diode <ul style="list-style-type: none"> -Motor Controllers -Converters • Snubber Diode • Uninterruptible Power Supply (UPS) • Induction Heating • High Speed Rectifiers 	<ul style="list-style-type: none"> • Ultrafast Recovery Times • Soft Recovery Characteristics • Popular TO-247 Package • Low Forward Voltage • High Blocking Voltage • Low Leakage Current 	<ul style="list-style-type: none"> • Low Losses • Low Noise Switching • Cooler Operation • Higher Reliability Systems • Increased System Power Density

MAXIMUM RATINGS

All Ratings: $T_C = 25^\circ\text{C}$ unless otherwise specified.

Symbol	Characteristic / Test Conditions	APT60D120B	UNIT
V_R	Maximum D.C. Reverse Voltage	1200	Volts
V_{RRM}	Maximum Peak Repetitive Reverse Voltage		
V_{RWM}	Maximum Working Peak Reverse Voltage		
$I_F(AV)$	Maximum Average Forward Current ($T_C = 60^\circ\text{C}$, Duty Cycle = 0.5)	60	Amps
$I_F(RMS)$	RMS Forward Current	100	
I_{FSM}	Non-Repetitive Forward Surge Current ($T_J = 45^\circ\text{C}$, 8.3ms)	540	
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_L	Lead Temperature: 0.063" from Case for 10 Sec.	300	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT	
V_F	Maximum Forward Voltage			2.5	Volts	
				$I_F = 120\text{A}$		2.0
				$I_F = 60\text{A}, T_J = 150^\circ\text{C}$		2.0
I_{RM}	Maximum Reverse Leakage Current			250	μA	
				$V_R = V_R \text{ Rated}, T_J = 125^\circ\text{C}$		500
C_T	Junction Capacitance, $V_R = 200\text{V}$		65		pF	
L_S	Series Inductance (Lead to Lead 5mm from Base)		10		nH	

DYNAMIC CHARACTERISTICS

APT60D120B

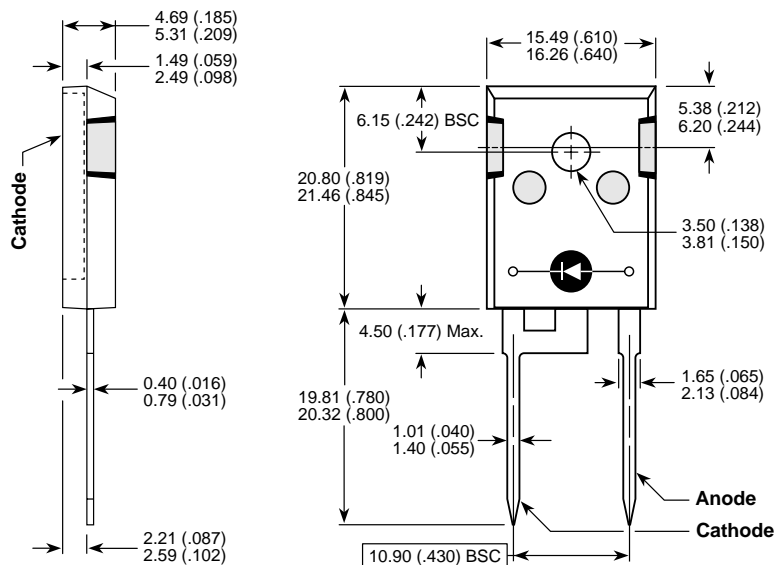
Symbol	Characteristic	MIN	TYP	MAX	UNIT
t_{rr1}	Reverse Recovery Time, $I_F = 1.0A$, $di_F/dt = -15A/\mu s$, $V_R = 30V$, $T_J = 25^\circ C$		70	85	ns
t_{rr2}	Reverse Recovery Time $I_F = 60A$, $di_F/dt = -480A/\mu s$, $V_R = 650V$	$T_J = 25^\circ C$	70		
t_{rr3}		$T_J = 100^\circ C$	130		
t_{fr1}	Forward Recovery Time $T_J = 25^\circ C$		170		
t_{fr2}	$I_F = 60A$, $di_F/dt = 480A/\mu s$, $V_R = 650V$ $T_J = 100^\circ C$		170		
I_{RRM1}	Reverse Recovery Current $T_J = 25^\circ C$		18	30	Amps
I_{RRM2}	$I_F = 60A$, $di_F/dt = -480A/\mu s$, $V_R = 650V$ $T_J = 100^\circ C$		29	40	
Q_{rr1}	Recovery Charge $T_J = 25^\circ C$		630		nC
Q_{rr2}	$I_F = 60A$, $di_F/dt = -480A/\mu s$, $V_R = 650V$ $T_J = 100^\circ C$		1820		
V_{fr1}	Forward Recovery Voltage $T_J = 25^\circ C$		12		Volts
V_{fr2}	$I_F = 60A$, $di_F/dt = 480A/\mu s$, $V_R = 650V$ $T_J = 100^\circ C$		12		
diM/dt	Rate of Fall of Recovery Current $T_J = 25^\circ C$		900		A/ μS
	$I_F = 60A$, $di_F/dt = -480A/\mu s$, $V_R = 650V$ $T_J = 100^\circ C$		600		

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			0.66	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance			40	
W_T	Package Weight		0.22		oz
			6.1		gm
Torque	Maximum Mounting Torque (Screw Type = 6-32 or 3mm Machine)			10	lb•in
				1.1	N•m

APT Reserves the right to change, without notice, the specifications and information contained herein.

TO-247 Package Outline



Dimensions in Millimeters and (Inches)

APT60D120B

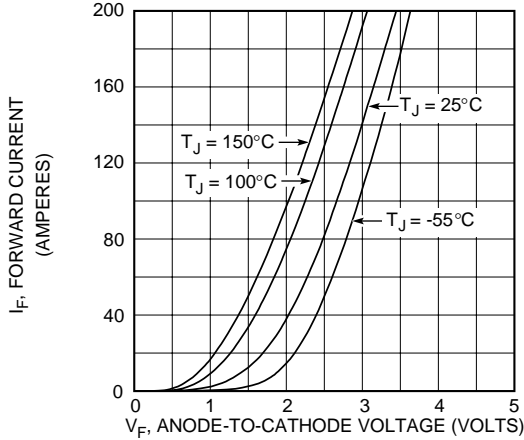


Figure 2, Forward Voltage Drop vs Forward Current

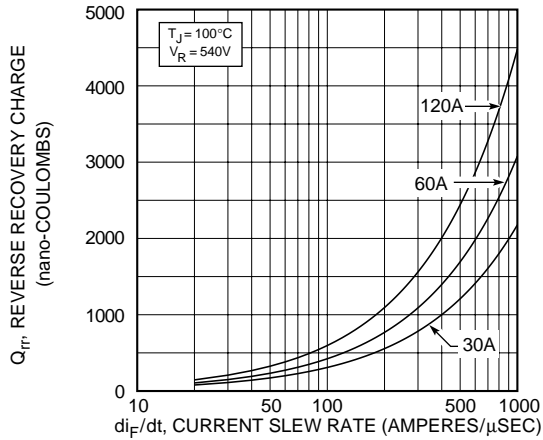


Figure 3, Reverse Recovery Charge vs Current Slew Rate

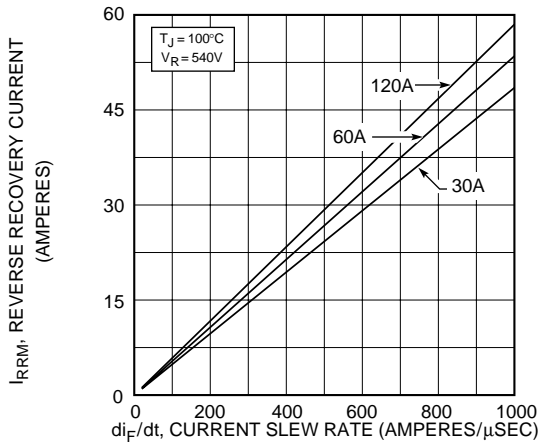


Figure 4, Reverse Recovery Current vs Current Slew Rate

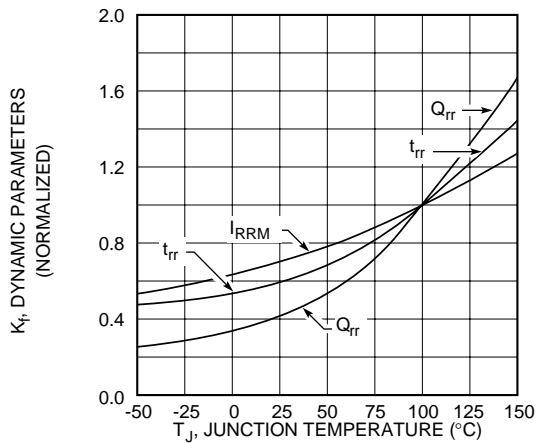


Figure 5, Dynamic Parameters vs Junction Temperature

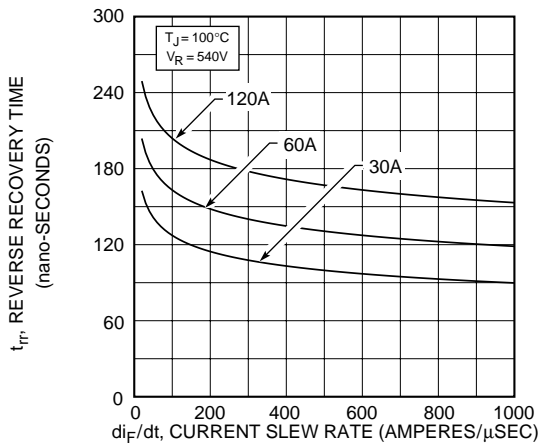


Figure 6, Reverse Recovery Time vs Current Slew Rate

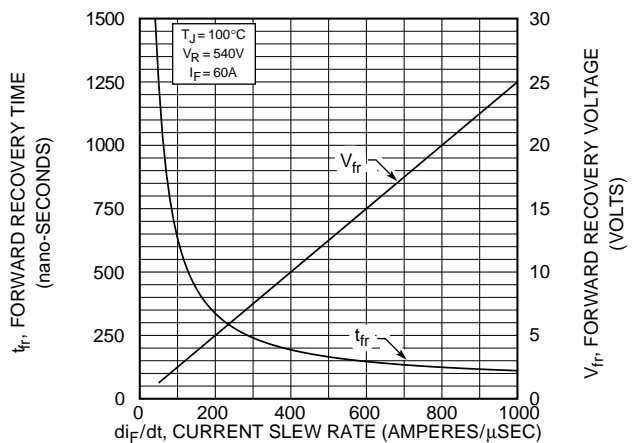


Figure 7, Forward Recovery Voltage/Time vs Current Slew Rate

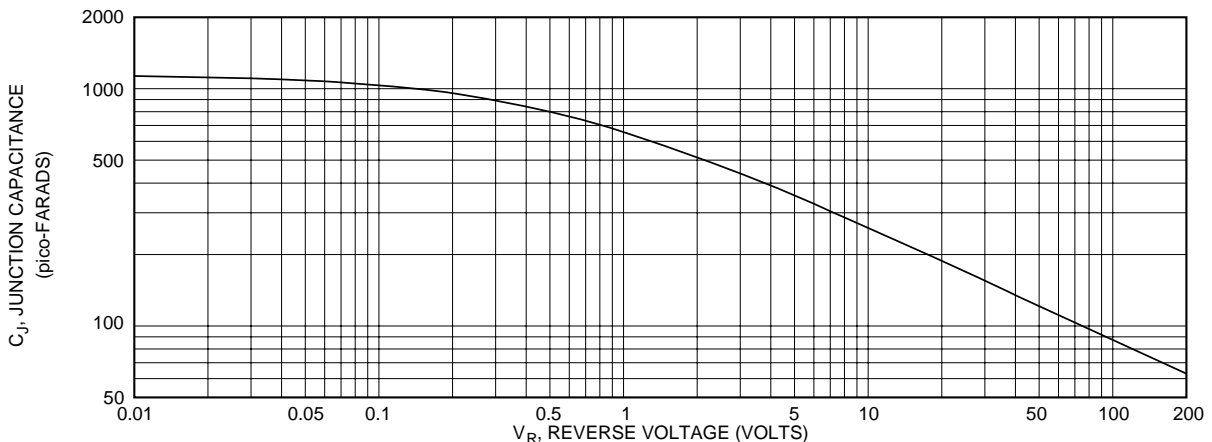


Figure 8, Junction Capacitance vs Reverse Voltage

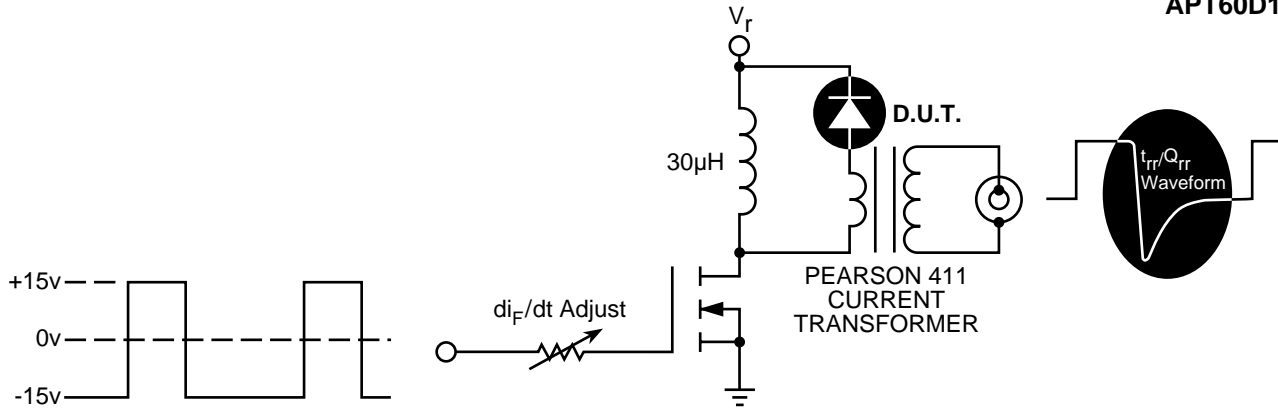


Figure 9, Diode Reverse Recovery Test Circuit and Waveforms

- 1 I_F - Forward Conduction Current
- 2 di_F/dt - Current Slew Rate, Rate of Forward Current Change Through Zero Crossing.
- 3 I_{RRM} - Peak Reverse Recovery Current.
- 4 t_{rr} - Reverse Recovery Time Measured from Point of I_F Current Falling Through Zero to a Tangent Line {6 diM/dt } Extrapolated Through Zero Defined by 0.75 and 0.50 I_{RRM} .
- 5 Q_{rr} - Area Under the Curve Defined by I_{RRM} and t_{rr} .
- 6 diM/dt - Maximum Rate of Current Change During the Trailing Portion of t_{rr} .

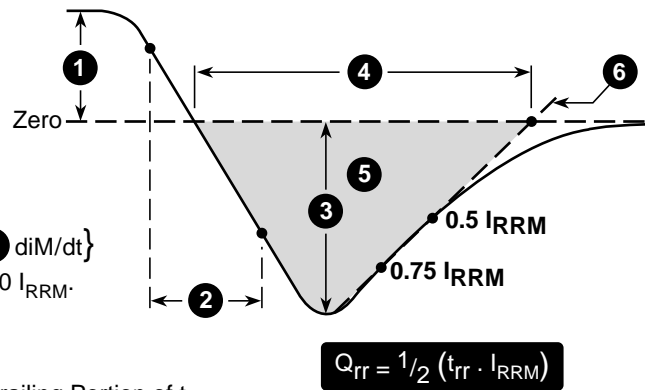
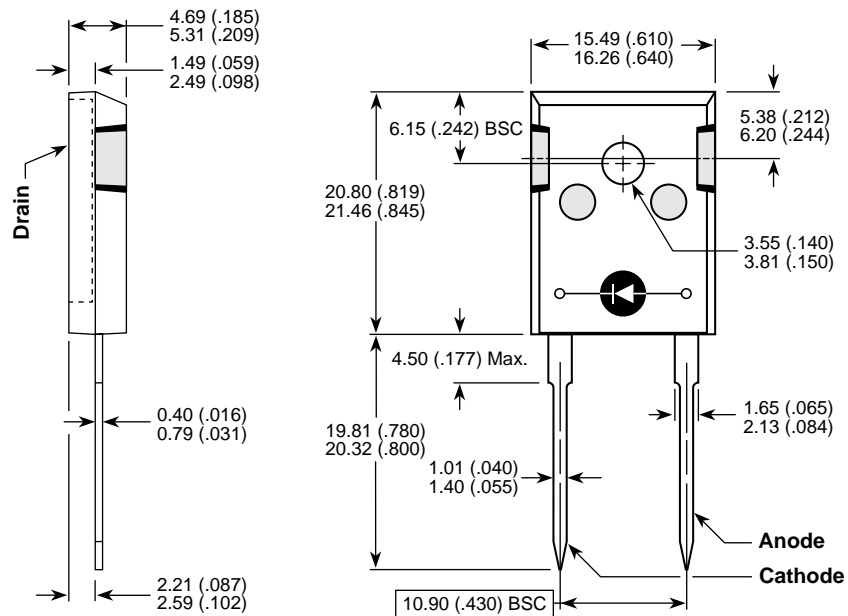


Figure 10, Diode Reverse Recovery Waveform and Definitions

APT Reserves the right to change, without notice, the specifications and information contained herein.

TO-247AD Package Outline



Dimensions in Millimeters and (Inches)